Fig. 1 (b) shows swing curve of bilayer resist

Fig. 2 (a) is a bilayer resist structute.

Fig. 2 (b) is a top surface imaging (silylation reaction) scheme

Fig. 2 (c) is a diagram showing swing ratio definition

Fig. 3 shows reflectance at resist/underlayer interface at 248nm as a function of underlayer thickness for different values of refractive index (n) using a fixed value of k = 0.25

Fig. 4 shows reflectance at resist/underlayer interface at 248nm as a function of underlayer thickness for different values of extinction coefficient (k) using a fixed value of n = 1.75

Fig. 5 (top) shows the measured reflectance and the calculated reflectance of a novolak material about 9000A thick as described in example 2. Fig. 5 (bottom) shows the corresponding n and k values as a function of wavelength

Fig. 6 (top) shows the measured reflectance and the calculated reflectance and transmittance of a BARL material about 7500Å thick as described in example 2. Fig. 6 (bottom) shows the corresponding n and k values as a function of wavelength.

Fig. 7 (top) shows the measured reflectance and the calculated reflectance and transmittance of a PHS based (4CU5) underlayer which is formulated as described in example 8. Fig. 7 (bottom) shows the corresponding n and k values as a function of wavelength.

Fig. 8 shows cross-sectional SEM pictures of 150nm L/S developed resist profiles on different novolak underlayers